



**Renewable Energy Management**

**WE MAKE YOUR  
LIFE EASY...**



**Lento Industries Private Limited, India**

[www.lentoindia.com](http://www.lentoindia.com)



## Company Overview



Lento is driven by research and development but with a difference. Here at Lento the focus is on harnessing power of R&D to develop innovative, future-proof products that are aligned with markets and requirements of end users. A group of young technocrats with this common ideology got together and thus was born Lento, a company specializing in Power Electronics and Energy Efficiency.

Today Lento has come a long way from its modest beginnings and our R&D powers manufacturing of advanced technologies base product that include Inverters, Online UPS and static UPS, Automatic Lift Back-up System (ALBS), Solar Power Equipments, LED lights and BLDC motor application based products.

Total quality management is part of our corporate philosophy and goes hand in hand with our R&D based approach to manufacture future-proof products. Technology, we believe, should be for use of the masses and must be implemented in a way that is affordable with products that are reliable and can be serviced easily in case of need. While growth lies in catering to requirements of large corporations, we have always created products that will also meet the requirements of individuals and small home owners.

Today we boast of one of the widest range of products ranging from compact inverters for home use to grid tie and stand alone power plants of. What sets our products apart from the rest is they feature intelligent controls, accuracy and precision one could find only in world famous, highly expensive brands. We have brought world class technologies and products to India through R&D, but at a fraction of the price. Lento today is on the threshold of greater expansion into a diverse range of products in efficiency power and energy.

## Business Values & Core Strength



R&D powers our business and is fundamental to Lento's underlying enterprise spirit that has helped us deliver quality, world class innovations and change the landscape of power electronics.

We design and develop smart, rugged and highly reliable products that offer the best price to performance ratio in the class. This core philosophy has helped us create some unusual, advanced power electronic devices, inverters, UPS, Solar batteries and LED lightings for energy efficiency products that will create a new dimension in this field.

We seamlessly integrate research & development, quality and delivery. Research by itself does not achieve much but research that brings products to markets and fulfils requirements is what makes a vital difference and Lento's focus on applied research does just that.

Anticipate the future and deliver products that are cost efficient and meet user requirements, giving them best returns on investments.

Manufacturing is supported by extensive service and maintenance with a division created specifically to handle this important task that is so essential for customer satisfaction.

Plough back profits into research and development of products as well as betterment of staff and the community in a holistic approach to business.

Listen to feedback from users as an important contributory element to improvement of our products and our way of working.



## Always on the Path of Progressive Technologies

Well on our way to becoming the top Indian Power Conversion Equipment Company, our strength is our in-house Research & Development wing. If our products have innovative features, perform with highest efficiency figures and are known for legendary reliability, the credit goes to our R&D team that has come up with designs customized for Indian operating conditions. We anticipate trends and tailor research to design products that perform flawlessly for years and are easy to maintain. Our R&D personnel have proven experience and work under an enlightened management that gives them free hand to innovate and develop products that make us market leaders.

R&D powers our activities and we consider it an essential part of operations and growth. R&D is what gives us the edge in an extremely competitive field.



## Design & Technology

Our design and technology is driven from a user perspective. We ask ourselves what is available in the market and what features do users want? This is the fundamental principles of our design and technology ideologies. While quality is a prime ingredient, cost considerations are equally important as are functionality, ease of use and total reliability. While taking care of these elements in our standard range of products, we also make them a part of our advanced technology products like our digital signal processing systems tied to switch mode technology used in our sine wave inverters. We modestly claim to be up there with the best, offering world class products and technologies as the outcome of our superior design capabilities.

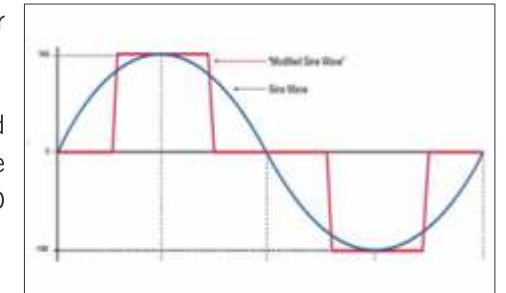


## Our Inclination towards Green Technologies

### Sine Wave Technology

❖ **Square Wave:** Very old style Inverter. OK for Bulb Loads. Not good for other appliances like Tube Lights, Fans, coolers and motors etc.

❖ **Quasi Sine Wave:** In basic it is square wave inverter, but at low load conditions the circuit in this type of inverters cuts some part of the square wave. Good for Bulbs. Not good for other appliances like Tube Lights, LED lights, Fans, coolers and motors etc.



❖ **Micro controller Based Pure Sine Wave:** Inverters are not pure sine wave as they claim it is. It gives low battery backup and it is very costly. Also these inverters create a very irritating high frequency noise which is very much disturbing.

❖ **DSP Based Pure Sine Wave:** This is the world's latest technology Inverter manufactured by Lento. This inverter is having all the advantages of Sine wave Inverter with backup time equal to square wave inverters. It creates no sound in load and in inverter. This gives exact replica of A C mains which is best suited for all kind of electrical appliances as all appliances are design to operate on this. This increases the appliances life span in terms of operation life.

### Solar System

Our units are flexible, modular and scalable allowing remote deployment with minimal physical intervention due to a high degree of electronic automated monitoring and controlling processes. Stand alone systems, hybrid, home units or industrial, grid tied, we have a solution for every situation. Being reliable and manufactured using military grade components, our solar systems perform day in, day out, for years with minimal maintenance.

### LED Lights

LED is the light of the future and Lento has developed advanced LED lighting devices in the form of LED bulbs and LED tube lights with high lumen output, excellent reliability, durability, color rendering and affordable prices. For interior lighting we have affordable energy efficient LED lights and for streetlights we offer next generation high lumen high watt LED arrays in the range of 3W to 150W which includes LED Bulbs, Tubelights & Street Lights. Our LED lighting solutions will save the nation a huge amount of energy and reduce green house gas emissions as well as the carbon footprint.

### BLDC Motor

BLDC motors are more versatile, mainly because of their savvy in the speed and torque departments. They also come in compact packages, making them viable for a variety of compact designs. Typical apps include computer hard drives, mechanical-based media players, electronic-component cooling fans, cordless power tools, HVAC and refrigeration, industrial and manufacturing systems, and direct-drive turntables.

Another advantage of a BLDC motor is that it can be made smaller and lighter than a brush type with the same power output, making the former suitable for applications where space is tight

Because a BLDC motor dispenses with the brushes – instead employing an “electronic commutator” – the motor’s reliability and efficiency is improved by eliminating this source of wear and power loss. In addition, BLDC motors boast a number of other advantages over brush DC motors and induction motors, including better speed versus torque characteristics; faster dynamic response; noiseless operation; and higher speed ranges.1

Traditionally, ferrite magnets were used to make the permanent magnets, While these magnets are more expensive, they generate greater flux density, allowing the rotor to be made smaller for a given torque. The use of these powerful magnets is a key reason why BLDC motors deliver higher power than a brush-type DC motor of the same size.

Moreover, the ratio of torque delivered relative to the motor’s size is higher, making it a good choice for applications such as washing machines and EVs, where high power is needed but compactness and lightness are critical factors.



## Manufacturing Facility



Lento boasts of state of art manufacturing facilities in a modular and well organized workflow environment. We have well organized sections segregated into.

- Input section where components are received and batch tested;
- PCB design and manufacturing section where our engineers use CAD stations to design PCBs and these are later translated to PCBs. We use only glass epoxy boards for high reliability;
- Assembly section with pick and place equipments for SMT and SMD, and wave soldering units in a highly automated, high speed process that gives us high production capabilities with consistencies and reliabilities built into the process. This is the heart of our manufacturing unit producing populated PCBs for solar systems, for inverters, UPS, SMPS and LED lights. We have opted for SMT and SMD resistors, capacitors and chips for compact form factor, fast manufacturing and high reliability as well as cost efficiency.
- Quality check division to check sub-assembly boards.
- Sheet metal unit where outer cabinets are manufactured and powder coated for long life.
- Final assembly and test section where each product undergoes 24 hour burn, overload, temperature and humidity tests according to international norms before being passed for dispatch.



## Manufacturing Facility

### Quality Consciousness

### Sourcing Quality Management

**"Quality is our Passion &  
Quality is our Business"**



Each of our products is made up of hundreds of components, majority of them sourced from reputed vendors. Still, we have our own stringent system of rigorous checks and instruments that will detect flaws in components. Our aim is to achieve zero defect and it starts with checking parts and components at source, not at the assembled stage.

Here at Lento we are of the firm belief that if we take care of quality at the source, half of the work is done and that too in an easy manner since it is easy to check components before fitting into circuit boards rather than try to identify faults afterwards. Hence, our rigorous focus on checking each component at source to ensure fail safe performance.

### In-house Production Quality

Our in-house production quality plan is simple and fool-proof because it is detailed and without compromises. We take lot-wise samples, check for all parameters and pass only assemblies that conform to specs. Only if samples pass stringent physical, electrical, mechanical and electronic tests are the final products approved for dispatch.

### In-Process Quality Management

Production comprises number of stages. Only those components that are approved go into process. Here too, each sub-assembly is tested for all parameters using human intervention and specialized tools and equipments developed for that purpose. Only if a sub-assembly passes the tests is it approved for onward process. If faults are detected production people receive full report and our R&D is also involved in order to detect and root out such flaws for future batches.

### Final Product Quality Management

The final product, whether it is a small inverter or a complex, digital, microprocessor controlled UPS or power plant, undergoes the 24 hour burn in test only once it passes the test for all parameters. Products are tested rigorously for no load, full load, overload and short circuit protection, for humidity performance, high ambient temperature performance and other factors to ensure they match our claims and give 100% reliability with zero defects.





## Solar Hybrid System

### Solar Hybrid Home Inverters (PCU-LKVA)



Solar Hybrid Systems (PCU) are ideal in case of higher loads. The Hybrid Solar System feature a bank of solar photo voltaic modules tied to a bank of batteries with a controlling interface. The controlling interface is the critical component here. Lento has designed a superior computerized digital controller with these features:

#### Salient Features

- ☛ User friendly LCD display.
- ☛ Smart Load sharing compatibility.
- ☛ Three stage solar charging (TSSC), suitable for all type of battery charging .
- ☛ Smart Over Load sensing with auto reset.
- ☛ PV availability , battery charging from solar power indication with display on LCD.
- ☛ Deep discharge battery charging from mains as well as solar .
- ☛ Selectable charging current for all type batteries (Tubular, SMF, Flat & Gel) with Dual charging option HI/Low.
- ☛ User selectable EC / NC switch.
- ☛ Smart grid charging with Enable/Disable option.
- ☛ User selectable UPS and Normal Mode.
- ☛ Generator compatible.
- ☛ Protections against short-circuit ,Mains Fuse Trip , Overload, reverse phase, low battery, reverse battery and over temperature (With proper indications with buzzer as well as display on LCD available).
- ☛ Computer compatibility.

#### Convenience

Our Solar Hybrid system uses both Solar Power as well as Mains for charging the battery bank according to parameter priority set, providing the users availability of uninterrupted power supply.

## Solar Hybrid System

### TECHNICAL SPECIFICATIONS

| Model name  | 650 VA 12 V DC   | 850 VA 12 V DC | 1050 VA 12 V DC | 1450VA 24 V DC | 2000 VA 24 VDC |
|---|--|----------------|-----------------|----------------|----------------|
| System rating (Name Plate)                                | 650  | 850            | 1050            | 1450           | 1450           |
| Full Load Input Current $\pm 2A$                          | 41   | 53             | 62              | 46             | 46             |
| Operating DC voltage                                      | 12   | 12             | 12              | 24             | 24             |
| PV Input voltage max Voc                                  | 25   | 25             | 25              | 45             | 45             |
| Maximum Solar array power                                 | 500  | 500            | 500             | 1000           | 1500           |
| Max PV modules of 250/260Wp                               | 2  | 2              | 2               | 4              | 4              |
| Parallel strings  | 2  | 2              | 2               | 4              | 4              |
| Max current rating of SCC                                 | 40 Amp DC  |                |                 |                |                |
| Efficiency of SCC   | >90 %  |                |                 |                |                |
| Type of Control   | PWM  |                |                 |                |                |
| Nominal Output voltage in inverter mode                   | 220V $\pm$ 7V V AC   |                |                 |                |                |
| Output supply phases                                      | Single   |                |                 |                |                |
| Nominal Frequency (in inverter mode)                      | 50 $\pm$ 1 HZ  |                |                 |                |                |
| Output voltage regulation                                 | 195 -220 V   |                |                 |                |                |
| Output THD (v) at linear load                             | <5%  |                |                 |                |                |
| Creast Factor   | 3:01   |                |                 |                |                |
| Overload capacity 125%                                    | 6 (6 Retry)  |                |                 |                |                |
| Cooling Fan ON at temp                                    | 60 (or 45% of rated Load or Solar I>15A) °C  |                |                 |                |                |
| Cooling Fan Off at temp                                   | 55 (or 40% of rated Load or Solar I<10A) °C  |                |                 |                |                |
| Battery low voltage cut per battery                       | 10.5 $\pm$ 0.1 (With 4 Retry)  |                |                 |                |                |
| Batter low cut recovery per battery through Solar         | 12.7 $\pm$ 0.1 (or Mains or reset switch on front panel)   |                |                 |                |                |
| Max Battery charging voltage by grid per battery          | "14.4 $\pm$ 0.1<br>settable for Tub-14.4V/28.8V, GEL-14.2V/28.4V, SMF-14.2V/28.4, Flat-14.2V/28.4<br>Vsettable for Tub-13.8V/27.6V, GEL-13.8V/27.6V, SMF-13.8V/27.6, Flat-13.6V/27.2V"   |                |                 |                |                |
| Max Battery charging current by grid in Hi/Lo option      | "16/12 $\pm$ 2<br>Asettable for Tub-12/16A, GEL-10/16A, SMF-10/14A, Flat-14/10"  |                |                 |                |                |
| Max Battery charging voltage by Solar per battery         | "14.4 $\pm$ 0.1<br>settable for Tub-14.4V/28.8V, GEL-14.2V/28.4V, SMF-14.2V/28.4, Flat-14.2V/28.4<br>Vsettable for Tub-13.8V/27.6V, GEL-13.8V/27.6V, SMF-13.8V/27.6, Flat-13.6V/27.2V"   |                |                 |                |                |
| Battery High cut with Alarm per battery                   | 14.8 $\pm$ 0.1 VDC   |                |                 |                |                |
| Battery High cut Recovery per battery                     | 14.3 $\pm$ 0.1 VDC   |                |                 |                |                |
| Max Battery charging current by Solar                     | 20 $\pm$ 2A VDC  |                |                 |                |                |
| Max Charging current to battery by Solar+Grid             | 20 $\pm$ 2A VDC  |                |                 |                |                |
| Grid low cut voltage (IT load/Normal load)                | 180/100 $\pm$ 10 VAC   |                |                 |                |                |
| Grid low cut voltage recovery (IT load/Normal load)       | 190/110 $\pm$ 10 VAC   |                |                 |                |                |
| Grid high cut voltage (IT load/Normal load)               | 265/280 $\pm$ 10 VAC   |                |                 |                |                |
| Grid high cut voltage recovery (IT load/Normal load)      | 255/270 $\pm$ 10 VAC   |                |                 |                |                |
| Grid charging Enable/Disable                              | yes  |                |                 |                |                |
| Selection of UPS Load/Normal Load                         | yes  |                |                 |                |                |
| Selection of Operating Mode                               | "HC-Charging current = 20A $\pm$ 1A Solar + Mains till battery boost voltage with maximum Solar Sharing. Syssem will not be disconnect Grid in any caseEC-Charging current= 20A $\pm$ 1A Solar + Mains till boost voltage, System will cut off the mains when battery voltage reaches boost voltage level and output load is transferred to Solar + Battery and Grid reconnected <=11.8V/11.2V per Battery." |                |                 |                |                |
| Output Voltage at No load at rated Battery voltage        | 220 VAC  |                |                 |                |                |
| Noise @ 1 meter   | <50 DB   |                |                 |                |                |
| Protections   | Overload, Battery Deep discharge,Battery Overcharge,Short circuit(1retry),Battery Hi,PV Reverse,Over Temp  |                |                 |                |                |
| LCD Display parameters                                    | "PV Current, Battery voltage, Mains voltage, UPS ON/OFF, UPS Mode, Symbol of sun (Smily) if solar available, (non smily symbol in absence of solar), Load percentage (0 to 150%), over load, short ckt, fault, battery low, over temp, PV reverse, Fuse trip, (Customised LCD )"   |                |                 |                |                |
| Indication LEDs   | Manis status,Mains Charging,Solar Charging,Tact switch Sttus   |                |                 |                |                |
| Operating Temperature range                               | 0-50   |                |                 |                |                |
| Storage Temperature range                                 | 0 +65  |                |                 |                |                |
| Max RH  | 95   |                |                 |                |                |
| Front panel details ( MCB, Display, Selection switch etc) | Display with tact switch   |                |                 |                |                |
| Rear panel details (MCB, Terminals etc)                   | O/P socket,fuse,mains & batt. Cable and fan  |                |                 |                |                |
| Enclosure protection                                      | 20   |                |                 |                |                |
| Changeover time from inverter to mains in UPS mode        | <10 Msec   |                |                 |                |                |
| Changeover time from mains to inverter in Normal mode     | <40 Msec   |                |                 |                |                |

Technical Specifications can be changed without prior notice.



## Solar Hybrid Industrial Inverter (PCU)



Our Solar Inverters (pure sine wave) are much perfect for hybrid solar system. It has inbuilt sine wave inverter and PWM solar charger/SMPS charger in a single unit. It is specially designed to keep battery healthy for longer time period.

### Salient Features

- Power Saving through No Load Shutdown Feature.
- Monitoring/Data logging feature for better system information at user end (optional).
- DSP based design with absolute and stable sine wave output voltage & frequency.
- State of art MOSFET based PWM technology with greater efficiency at lower cost with dynamic stability.
- Three Stage solar charging (TSSC) suitable for all types of battery charging.
- Combined mains and solar intelligent constant current charging with solar power priority.
- Maximum Solar Power Utilization during charging and backup mode.
- PV availability, battery charging from solar power indication with display on LCD and LED.
- User friendly, feather touch control and selection switches with LED indication on front panel.
- PV pole reversal protection indication on LCD
- Deep discharge battery charging from mains as well as solar.
- More back-up being a sine wave UPS (ASIC Control).
- No humming Noise (Silent UPS)
- Protections such as Mains Fuse Trip, Overload, Short circuit, Battery low, over temperature indication with buzzer as well as display on LCD available.
- Mains available, battery charging/Charged and its voltage indication provided on LCD display as well as LED.
- Grid charging enable/ disable options.

## Solar Hybrid Industrial Inverter (PCU-SKVA)

### TECHNICAL SPECIFICATIONS

| System Capacity            | 2.5KVA     |          | 3.5KVA   | 5KVA     | 7.5KVA    | 10KVA    |
|----------------------------|------------|----------|----------|----------|-----------|----------|
| Max PV Panel Power         | 2500W      | 2500W    | 3500W    | 5000W    | 7500W     | 10000W   |
| Battery Voltage            | 36V        | 48V      | 48V      | 48V/96V  | 96V/120V  | 192V     |
| No Load Current            | ≤2.2A      |          |          |          |           |          |
| Output Voltage @ No Load   | 220V ±5V   |          |          |          | 230V ±5V  |          |
| Output Voltage @ Full Load | 195V-220V  |          |          |          | 195V-230V |          |
| DC Current @ Full Load     | 63A ± 2A   | 46A ± 2A | 63A ± 2A | 46A ± 2A | 64A ± 2A  | 45A ± 2A |
| Output Frequency           | 50HZ ± 1HZ |          |          |          |           |          |
| Solar Charger Type         | PWM        |          |          |          |           |          |

### UPS MODE

|                          |                   |
|--------------------------|-------------------|
| Low Cut Voltage          | 180±10V           |
| Low Cut Recovery         | 9V-12V HYSTERESIS |
| High Cut                 | 260V ± 10V        |
| High Cut Recovery        | 9V-12V HYSTERESIS |
| Change Over Mains to UPS | <=10ms            |
| Change Over UPS to Mains | <= 10ms           |

### NORMAL MODE

|                          |                   |         |
|--------------------------|-------------------|---------|
| Low Cut Voltage          | 100±10V           | 125±10V |
| Low Cut Recovery         | 9V-12V HYSTERESIS |         |
| High Cut                 | 280V ± 10V        |         |
| High Cut Recovery        | 9V-12V HYSTERESIS |         |
| Change Over Mains to UPS | <=50ms            |         |
| Change Over UPS to Mains | <= 10ms           |         |

### CHARGING MODE (HC/QC)

|  |   |
|--|---|
| Max Charging @ Mains Only                | 20A ± 2A  |
| Max Charging @ Solar Only                | 30A ± 1A  |
| Max Charging @ Solar + Mains             | 25A ± 1A  |
| Solar + Mains Charging Current Adding in | HC Mode , Max charging current below 13.7V Battery voltage; above 13.7 Battery Voltage charging current is 15A ± 1A |

### CHARGING MODE (NC/EC)

|  |          |
|--|----------|
| Max Charging @ Mains Only  | 20A ± 2A |
| Max Charging @ Solar Only  | 30A ± 1A |
| Max Charging @ Solar + Mains   | 25A ± 1A |
| Mains Charging Current will be zero if solar current is >13A, Max charging current below 13.7V Battery Voltage; above 13.7V Battery Voltage, charging current is 15A ± 1A, system will cut off the mains when battery voltage reaches Boost voltage level and Output load is transferred to Solar + Battery Power. |          |

### BATTERY CHARGING VOLTAGE

|               |                         |
|---------------|-------------------------|
| Boost Voltage | 14.2 V ± 0.2V / Battery |
| Float Voltage | 13.7 V ± 0.2V / Battery |

### PROTECTION

|  |                |
|--|----------------|
| Over Load Warning  | Yes            |
| Over Load Protection   | Yes            |
| Battery Low Alarm  | Yes            |
| Battery Low Protection                                       | Yes            |
| Over Temperature Alarm                                       | Yes            |
| Over Temperature Protection                                  | Yes            |
| Short Ckts (Mains Mode)                                      | Mains MCB Trip |
| Short Circuit Protection (Battery Mode)                      | Yes            |
| Short Circuit Retry (Battery Mode)                           | Yes            |
| PV Reverse Protection  | Yes            |
| Mains MCB Trip/Fuse Trip                                     | Yes            |
| * All Protections are resettable through PCU switch & Mains. |                |

Technical Specifications can be changed without prior notice.



MPPT Solar Hybrid Inverter (PCU)



MPPT Solar Inverters are a next generation solar inverters, High efficiency MPPT technology ensure 20 % to 30% more solar power harvesting from the same capacity solar panels as compare to other technology. Its state-of-the-art design and intelligent control optimizes the yield of all PV installations in residential, offices, rural and other remote installations with very poor or no grid availability.

It consists of MPPT based solar charge controller and bi-directional inverter with transformer on the AC side. Transformer based design makes our inverter more rugged and reliable in verse grid input conditions. It provides uninterrupted pure sine wave power at the load output using solar, battery and grid input in customizable order of priority.

Latest DSP based control ensures excellent performance and protection from any kind of malfunction.

The high conversion efficiency helps in longer battery backup. Ease of operation and Plug 'N' Use type of design make it the ideal product for all kinds of users.

Salient Features

- Intelligent Charging Algorithm to increase Battery Life
- MPPT based Stste-of-the-art Latest technology for Optimum Performance
- Smart solar charging current sharing when mains is available
- Great Power saving
- DSP based automatic battery level management
- Compatible with Inverter load as well as UPS load
- Priority selection option Solar/Battery/Grid.
- User Friendly operation
- Silent operation
- Extra Back up
- Smart power saver
- Three stage solar charging control
- Environmental Friendly

Advance Battery Management for longer battery life and prevent battery from overcharging

MPPT Solar Hybrid Inverter (PCU)

Technical specifications

| Model   | 1450 VA 24 VDC  | 2 KVA 24VDC    | 3.5 KVA 48 V DC                      | 5 KVA 48 V DC  |
|---|---|----------------|--------------------------------------|----------------|
| OUTPUT Parameters                                   |   |                |                                      |                |
| Voltage Regulation                                  | 220±7V AC   | 220±7V AC      | 220±7V AC                            | 220±7V AC      |
| Frequency Regulation                                | 50Hz ± 1 Hz   | 50Hz ± 1 Hz    | 50Hz ± 1 Hz                          | 50Hz ± 1 Hz    |
| Output Waveform                                     | PURE SINE WAVE  | PURE SINE WAVE | PURE SINE WAVE                       | PURE SINE WAVE |
| Crest Factor  | >3:1  | >3:1           | >3:1                                 | >3:1           |
| Inverter Voltage                                    | 24V DC  | 24V DC         | 48V DC                               | 48V DC         |
| Maximum panel Voltage (Voc)                         | 80V DC  | 80V DC         | 150V DC                              | 150V DC        |
| Panel Power   | 1000W   |                | 2000W                                |                |
| Maximum Power point Voltage Range (Vmp)             | 60V DC  | 60V DC         | 120V DC                              | 120V DC        |
| Charge controller current (Max.)                    | 40A   |                | 40A                                  |                |
| Inverter efficiency                                 | 85%   |                |                                      |                |
| Charger Efficiency                                  | 90%   |                |                                      |                |
| Input Mains Parameters                              |   |                |                                      |                |
| Normal mode parameter                               |   |                |                                      |                |
| Input supply  | 100V–280V AC ±10V AC  |                |                                      |                |
| Change over time                                    | <40mS   |                |                                      |                |
| UPS mode parameter                                  |   |                |                                      |                |
| Input supply  | 180V–260V AC ±10V AC  |                |                                      |                |
| Change over time                                    | <10 ms  |                |                                      |                |
| Charging Parameters                                 |   |                |                                      |                |
| Dual mode charging current control /SOLAR Charging" | Charging Current @ 220V AC –13A±1Amp                                    |                | Charging Current @ 220V AC –13A±1Amp |                |
|   | Solar Charging Current 40A±1Amp Max                                     |                | Solar Charging Current 80A±1Amp Max  |                |
| Extra Features                                      |   |                |                                      |                |
| Protection  | * Inverter Over load  |                | * Fuse blown                         |                |
|   | * Over Temperature Protection   |                | * Battery low                        |                |
|   | * Short circuit /Permanent short circuit                                |                | * Surge current                      |                |
|   | * PV reverse  |                | * Mains Over /Under Voltage          |                |
| LCD Display Parameters                              | Mains Voltage   |                | All Protection                       |                |
|   | Mode Display ( UPS /Normal)   |                | Load %                               |                |
|   | Inverter Voltage  |                | Solar Available or not               |                |
| Features  | * Intelligent Charging Algorithm to increase Battery Life               |                |                                      |                |
|   | * MPPT based Stste–of–the–art Latest technology for Optimum Performance |                |                                      |                |
|   | * Smart solar charging current sharing when mains is available          |                |                                      |                |
|   | * Great Power saving  |                |                                      |                |
|   | * DSP based automatic battery level management                          |                |                                      |                |
|   | * Compatible with Inverter load as well as UPS load                     |                |                                      |                |
|   | * Priority selection option Solar/Battery/Grid.                         |                |                                      |                |
|   | * User Friendly operation   |                |                                      |                |
|   | * Silent operation  |                |                                      |                |
|   | * Bypass switch for manual Operation                                    |                |                                      |                |
|   | * Extra Back up   |                |                                      |                |
|   | * Smart power saver   |                |                                      |                |
|   | * Three stage solar charging control                                    |                |                                      |                |
|   | * Environmental Friendly  |                |                                      |                |
| Operating Temperature                               | 0–45 C  |                |                                      |                |
| Relativity Humidity                                 | Max 95% non considering   |                |                                      |                |
| Enclosure   | ip20  |                |                                      |                |

Technical Specifications can be changed without prior notice.



Solar Home Lighting System



Lento has designed its solar home lighting system to give maximum lumen output, be maintenance free and have an extremely long life. It is very simple in construction and easy to deploy. The SPV module has a built in support and users can place it anywhere on the terrace where they receive sunlight for at least 5 to 6 hours. Wires from these connect to the controller unit that also has connections to two LED luminaries and an output socket which can be used to power other devices.

Lento solar home lighting systems use high efficiency solar photovoltaic modules with a small footprint. High efficiency, high lumen white LEDs are used in the luminaries to give higher lumen output but at substantially lower power consumption in comparison to CFL. This means a smaller solar panel and smaller battery can be used at a lower cost for the same duration of light output from the system. It is also lower in cost.


Benefits

- Easy to install.
- No Electric Connection Required, No electric Bill

Typical Applications & Uses

Lighting for homes, shops, banks, clinics, corridors etc.

Salient Features

- 
- System is completely shock proof due to low voltage circuitry.
  - Short circuit protection.
  - Safe and easy to install.
  - Free from noise, smoke and pollution.
  - Required very little attention.
  - Possible to expand the system in future.
  - Available in different configuration.
  - Mobile Charging (Optional)
  - FM Radio (Optional)
  - Night Lamp (Optional)
  - Digital Battery Status (Optional)

PRODUCT RANGE

|  | LED SOLAR HOME LIGHTING<br>LSHL - L01 | LSHL - L02 |
|--|---------------------------------------|------------|
| Type of Luminary   | LED                                   | LED        |
| LED Lamps  | 3W X 1                                | 3W X 2     |
| DC Fan   | Optional                              | Optional   |
| Solar Module (Wp)  | 10                                    | 20         |
| 12V Battery (AH)   | 7                                     | 12         |
| Recommended hours of charging at full sun shine (1Kw/m <sup>2</sup> irradiance) for daily usage of 4 hours | 3                                     | 3.5        |
| Maximum autonomy days, assuming 4 hours per day  | 3                                     | 3          |
| Maximum continuous backup (hours)  | 14                                    | 14         |

Solar Panels



Lento solar panels are manufactured under controlled conditions with rigorous tests to ensure performance and rated performance over rated life. We use high efficiency polycrystalline silicon cells and the latest in bonding techniques to interconnect cells followed by vacuum sealing and affixing to frames resulting in compact construction, space savings with corresponding higher output of power. The result is a panel that withstands climatic conditions and performs efficiently over its rated life of 25 years with only a drop of 5 to 10%.

Salient Features

- Tempered water white glass plate, extruded aluminium frame for industry standard fitment, vacuum sealing using UV resistant encapsulating resin and EVA sandwich to conform to MNRE and international specifications
- IEC 61215, ISO 9001 and ISO 14001:2004 complied
- Polycrystalline cells
- More Energy Efficient
- UV Resistant thermo setting plastic
- Encapsulate ethylene vinyl acetate, cushions the solar cells within the laminate and protects the cell due to harsh weather conditions.
- The high strength polymer sheet protects the rear surface from ingress of moisture and mechanical damage.

Technical Specification of Solar Panels

|   |            |             |                                     |                                     |
|---|------------|-------------|-------------------------------------|-------------------------------------|
| Power (Pm) in Watts (nominal)             | 100 (0±3%) | 150 (0~+3%) | 250 (0~+3%)                         | 300 (0~+3%)                         |
| Open Circuit Voltage (Voc) in Volts       | 22         | 22          | 44.5                                | 44.5                                |
| Short Circuit Current (Isc) in Amps       | 6          | 8.8         | 8.7                                 | 8.7                                 |
| Voltage at Maximum Power (Vmp) in Volts   | 18         | 18          | 36                                  | 36                                  |
| Current at Maximum Power (Imp) in Amps    | 5.55       | 8.33        | 8.2                                 | 8.2                                 |
| Maximum System Voltage 1000V 1000V        | 1000V      | 1000V       | 1000V                               | 1000V                               |
| Solar Cells per Module (Units)            | 36         | 36          | 72                                  | 72                                  |
| Length x Width x Thickness (L x W x T) mm | 100x665x35 | 1480x665x35 | 1645x990x35                         | 1745x990x35                         |
| Weight – Kg                               | 9          | 12.5        | 18                                  | 22                                  |
| 9 Mounting Holes Pitch (Y) – mm 510 510   | 510        | 740         | 1000                                | 1000                                |
| Mounting Holes Pitch (X) – mm             | 633        | 633         | 958                                 | 1159                                |
| Area – Sq. M                              | 0.68       | 0.98        | 1.63                                | 1.89                                |
| Junction Box                              | 3T/2T      | 3T          | IP65 4T With Play & Plug connectors | IP65 4T With Play & Plug connectors |

Note : ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE



# Renewable Energy Management

## Solar Charge Controller (PWM/MPPT Type)

MOSFET based solar charger incorporates circuitry that senses battery voltage. If voltage falls below a certain value the MOSFET switches on through the PWM controller that delivers pulsed power. As battery begins to charge up the power to it progressively reduces and when the battery is fully charged the circuit switches off delivery of power to the battery keeping it in full stand by condition. This circuitry also prevents over charge of battery that can lead to loss of electrolyte. It works unattended and is simply to operate as well as maintain, with the least part count.



### Salient Features

- Designed for fool-proof installation even by mechanics with minimum training
- Protection from reverse current flow battery to solar array during night
- Self diagnostics and inbuilt protection features to prevent damages by incorrect terminations, system shorts or connections
- MOSFET based series PWM/MPPT charging technology for improved battery life and maximum performance
- Automatic detection of system voltage
- Use of MOSFETs avoids the use of mechanical relays that are prone to failures
- Can be adapted to charge Gel, tubular or flooded battery types
- Inbuilt temperature detection and compensation for the battery to maintain battery life
- Over charging protection, overheating protection, over discharge protection and overload protection
- Reverse polarity protection
- Potentially increase the charging efficiency by 30% in MPPT based product.

### Product Range

Available from 10 Amps continuous charging current to 60 Amps to suit different SPV array and battery configurations from 12 to 192 VDC

# Lead Acid Solar Tubular Batteries



Lento uses premium technology and high grade materials in these lead acid tubular batteries to deliver maximum power for extended durations and have an appreciably longer life span. These batteries are specifically suitable for powering up UPS and inverters.

Lento flooded lead acid batteries are environment-friendly, highly reliable in performance and are low in cost. Here again our extensive research and development wing has helped us create batteries customized to suit Indian operating conditions. These flooded batteries are perfect for use in battery powered vehicles and to power inverters as well as for telecom use.

### Salient Features

- Specially mixed corrosion resistant alloy for spins & grids.
- Tubular gauntlets of high brushing strength with high performance for positive plates.
- Low maintenance battery
- Specially designed vent plugs to trap electrolyte loss
- Good recovery from deep discharging.
- Long shelf life when left unattended for extended periods
- Long life cycle





Lead Acid Solar Tubular Batteries

TECHNICAL SPECIFICATION OF SOLAR TUBULAR BATTERIES

| Model    | Capacity at 27 deg C When discharged at (C20 upto 1.75 VPc 1.280) | Dimension (+/- 3MM) |       |        | Weight (Kg +/-5%) |        | Volume of Electrolyte (1.220 Sp. Gr) | Initial Charge Minimum AH Input (AH) | Initial Charge at Constant Current (A) |                        | Constant Potential Limiting Current (Amps) | Trickle Charge Current in (mA) |      |
|----------|---|---------------------|-------|--------|-------------------|--------|--------------------------------------|--------------------------------------|--|------------------------|--|--------------------------------|------|
|          |   | Length              | Width | Height | Dry               | Filled |                                      |                                      | Start (Upto 2.3Vpc)                    | Finish Upto( 2.75 Vpc) |  | Min.                           | Max. |
| LI 7500  | 75 AH   | 504                 | 218   | 254    | 18.3              | 32.5   | 14.5                                 | 7.5                                  | 3.7                                    | 265                    | 12.5                                       | 65                             | 260  |
| LI 10000 | 100 AH  | 504                 | 218   | 254    | 19.5              | 34     | 14                                   | 10                                   | 5                                      | 350                    | 16.7                                       | 85                             | 350  |
| LI12000  | 120 AH  | 500                 | 187   | 416    | 28                | 54     | 20                                   | 12                                   | 6                                      | 420                    | 20   | 105                            | 420  |
| LI15000  | 150 AH  | 500                 | 187   | 416    | 31                | 57     | 19.5                                 | 15                                   | 7.5                                    | 525                    | 25   | 130                            | 520  |
| LI18000  | 180 AH  | 500                 | 187   | 416    | 35.5              | 60     | 19                                   | 18                                   | 9                                      | 630                    | 30   | 155                            | 625  |
| AL20000  | 200 AH  | 500                 | 187   | 416    | 38.5              | 63     | 19                                   | 20                                   | 10                                     | 700                    | 33.5                                       | 175                            | 695  |
| AL22000  | 220 AH  | 500                 | 187   | 416    | 41.5              | 66     | 18                                   | 22                                   | 11                                     | 770                    | 36.6                                       | 190                            | 765  |

Technical Specifications can be changed without prior notice.

\* The height mentioned is upto terminal top.  
INITIAL CHARGING INSTRUCTION FOR DRY CHARGE BATTERY :

- 1. Filling in specific Gravity 1.220 +/- 0.005 at 27 deg C
- 2. Rest Period 12 hrs
- 3. In order to reduce the charging time , the following route may be adopted .  
For LI 7500 . The initial 2.36Vpc charging current may be 7.5A upto followed by 3.7A upto 2.75VPC  
For LI 10000 . The initial 2.36Vpc charging current may be 10A upto followed by 5A upto 2.75VPC  
For LI 12000 . The initial 2.36Vpc charging current may be 12A upto followed by 6A upto 2.75VPC  
For LI 15000 . The initial 2.36Vpc charging current may be 15A upto followed by 7.5A upto 2.75VPC  
For LI 18000 . The initial 2.36Vpc charging current may be 18A upto followed by 9A upto 2.75VPC  
For LI 22000 . The initial 2.36Vpc charging current may be 22A upto followed by 11A upto 2.75VPC

- CONDITION OF FULLY CHARGED :
- a) 3 consecutive hourly reading of specific gravity and voltage become constant .
  - b) Top of charge voltage will be around 16.2 V - 16.5 V
  - c) All Cells should be gas freely
  - d) Minimum Ah has been given
  - 5. Specific Gravity at fully Charged condition 1.240 +/- 0.005 at 27 Deg C

Sealed Maintenance Free Batteries

Lento SMF batteries differ from traditional gel based SMF batteries in that the same charging system without modification of current or voltage can be used as one uses for charging flooded batteries. At the heart of Lento SMF technology is the use of special grade fine fibre high density glass mats with a high degree of porosity. These glass mats are sandwiched between the positive and negative plates and hold a higher amount of acid electrolyte firmly held between the fibres. Silica gel is not used in the composition of the electrolyte. Glass mat and acid combination is chosen to permit higher and easy migration of ions between positive and negative plates. Besides, these batteries feature low internal resistance with characteristics similar to flooded batteries. The benefits are that the batteries do not need topping up with water or electrolyte throughout their service life. In addition, these batteries have a longer than usual service life, consistent current and voltage delivery, deep discharge capability and the ability to supply high rush of starting current in case of inductive loads. Charging is easy, using traditional flooded acid battery charger thus saving on cost of recalibration or purchase of specialized charger for the SMF battery.



| Model No. | Products | Weight in Kgs | Dimensions (mm) |       |        |              |
|-----------|----------|---------------|-----------------|-------|--------|--------------|
|           |          |               | Length          | Width | Height | Total Height |
| LPB 26    | 26AH     | 8.1           | 175             | 166   | 125    | 125          |
| LPB 42    | 42AH     | 13.0          | 197             | 165   | 169    | 169          |
| LPB 75    | 75AH     | 21.5          | 259             | 169   | 210    | 228          |
| LPB 100   | 100AH    | 28.5          | 328             | 172   | 222    | 222          |
| LPB 150   | 150AH    | 44.5          | 483             | 170   | 241    | 241          |
| LPB 200   | 200AH    | 58.5          | 522             | 240   | 219    | 240          |

\*Specifications are subject to change without any prior notice

Salient Features

- The Lento Battery does not much emit corrosive acidic fumes so its safe to install doors.
- No leakage, seepage or spillage of electrolytes.
- Can be installed in any application.
- Life of the Lento battery is between 3-5 years depending upon the usage.
- The self-discharge rate of the Lento battery is very low. Therefore, it has a much longer shelf life.
- Available in factory charged condition, so can be immediately used.
- Gets charged faster than other batteries due to its special features. Quicker use ability for repeated application.



Solar Power Pack

Lento Solar Power Pack – Utilize with three white LED Luminary (One 5 Watt and Two 3 watt) , one DC ceiling fan 25 watt and mobile charging plug point .

Silent Feature

- An energy efficient controller for rural/urban solar charging system.
- Low Power Load Controller and MPPT solar charger in a single Unit.
- Perfect solution for urban and rural requirements.
- Keeps battery healthy for longer period.
- Optimum utilization of Solar Power.
- Works on both Solar and AC mains power.
- Wide LCD display with USB mobile charger.
- Provision for Temperature Compensation.
- Low PV to Battery Drop.
- Protected against over load, short circuit, battery deep discharge, over charge and reverse flow conditions
- In-built AC mains battery charger and Solar Charge Controller with temperature compensation

Electrical Specification

| S.N.                  | Parameters  | Specification     |
|-----------------------|---|-------------------|
| 1                     | Operating Battery Voltage   | 11.0~15 VDC       |
| 2                     | Quiescent Current(NLC)  | <20mA             |
| 3                     | Full Load Battery Current   | 4A                |
| 4                     | Battery Low Trip  | 11.1 ± 0.2V       |
| 5                     | Rated Current MPPT  | 10± 1A            |
| 6                     | Operating Mains Voltage   | 100~280Vac        |
| 7                     | Rated Current Mains   | 5± 1A             |
| 8                     | Charging Current (Mains + PV )  | 10± 1A            |
| 9                     | Max. DC Load  | 45W               |
| 10                    | Load Sharing when MPPT current increase mains charger current decrease respectively | Should be ok      |
| 11                    | Mobile Charging   | Should be ok      |
| 12                    | Load Reconnect  | 12.5V             |
| 13                    | Overload retry  | 3 Nos             |
| 14                    | Battery Boost Voltage   | 14.4±0.2V         |
| Protection            |   |                   |
| 15                    | Overload  | >45W              |
| 16                    | Short Circuit   | Should be ok      |
| 17                    | PV Reverse  | Should be ok      |
| 18                    | All protection reset by switch  | Should be ok      |
| Visual LED Indication |   | Indication        |
| 1                     | Green   | PV Charging       |
| 2                     |   | Press(Glow)       |
| 3                     | Red   | Battery Low       |
| 4                     | LCD Back Light On   | Press(Glow)       |
| 5                     | PV Voltage  | Should be display |
| 6                     | PV Current  | Should be display |
| 7                     | Battery Voltage   | Should be display |
| 8                     | Charging status in %  | Should be display |
| 9                     | Charging Current  | Should be display |
| 10                    | Load Voltage  | Should be display |

Technical Specifications can be changed without prior notice.

Solar LED Street Lighting Solution



Concerns over global climatic change, local air pollution and resource scarcity make photovoltaic (PV) an increasingly attractive energy supply technology, the sun being an in-exhaustive, reliable, non-polluting source of power. Using solar energy with LEDs instead of CFL provides a very efficient solution. Solar powered outdoor lighting products are ideal for lighting the area in remote locations where the electricity is unavailable or erratic. Even in urban areas, solar led street lights find great usage to reduce dependency on conventional power and contribute towards green energy. Reliable and long life makes this solution effective in fulfilling our present and future lighting requirements.

Salient Features

- No line voltage, trenching, or metering
- No power outages
- Independent power and light source- no two systems are connected, hence no single point of failure.
- Easy to install
- No maintenance except for the battery
- Better and long life light source - LED lights feature white light without flickering and instant on.
- Safe 12/24 volt circuit, no risk of electric shock.
- self -contained solution ligt on/ off controlled by automatic daylight sensing.
- Battery backup for cloudy or rainy days
- Automatic dawn dusk operation (with timer-optional)
- No running cost





Solar LED Street Lighting Solution

Technical specifications (Solar LED Street Lighting)

|                                |   |           |                          |           |  |            |                          |                 |                 |
|--------------------------------|---|-----------|--------------------------|-----------|--|------------|--------------------------|-----------------|-----------------|
| Luminary Rating                | 7W  | 10W       | 12W                      | 18W       | 20W  | 30W        | 40W                      | 50W             | 60W             |
| LED Type                       | Chip led 1.2W 3030 OSRAM  |           |                          |           |  |            |                          |                 |                 |
| No. Of LED                     | 12  | 15        | 21                       | 27        | 30   | 48         | 60                       | 75              | 90              |
| Wattage ±5%                    | 7W  | 10W       | 12W                      | 18W       | 20W  | 30W        | 40W                      | 50W             | 60W             |
| Type                           | W–LED   |           |                          |           |  |            |                          |                 |                 |
| Luminous efficacy              | > 100 Lumen /Watt   |           |                          |           |  |            |                          |                 |                 |
| Color temperature range        | 5500°K–6500°K   |           |                          |           |  |            |                          |                 |                 |
| Life time                      | 50,000 hrs  |           |                          |           |  |            |                          |                 |                 |
| Colour rendering index         | > 80  |           |                          |           |  |            |                          |                 |                 |
| Viewing Angle                  | 120°  |           |                          |           |  |            |                          |                 |                 |
| Charge controller type         | Microcontroller based MOSFET drive PWM  |           |                          |           |  |            |                          |                 |                 |
| Charge controller rating ±0.5A | 6A  |           |                          | 10A       |  | 15A        |                          |                 |                 |
| Charging efficiency            | > 90%   |           |                          |           |  |            |                          |                 |                 |
| Auto dusk to down              | Provided  |           |                          |           |  |            |                          |                 |                 |
| Auto dimming                   | 5.30 ~ 6 Hour   |           |                          |           |  |            |                          |                 |                 |
| Lighting quality               | Uniform illumination , free fom glare and flickering  |           |                          |           |  |            |                          |                 |                 |
| Working temperature            | –20°C to 55°C   |           |                          |           |  |            |                          |                 |                 |
| Humidity                       | 35 to 85% RH  |           |                          |           |  |            |                          |                 |                 |
| Temperature Compensation       | Provided  |           |                          |           |  |            |                          |                 |                 |
| Load regulation                | < 2%  |           |                          |           |  |            |                          |                 |                 |
| Material                       | ADC12 alluminum alloy_PDC housing   |           |                          |           |  |            |                          |                 |                 |
| Diffuser                       | Poly carbonate (PC) /Glass  |           |                          |           |  |            |                          |                 |                 |
| Gasket                         | Silicone gasket   |           |                          |           |  |            |                          |                 |                 |
| IP rating                      | IP65  |           |                          |           |  |            |                          |                 |                 |
| Low Voltage cut off ±0.2V      | 11.1V   |           |                          |           |  |            |                          |                 |                 |
| Load reconnect ±0.2V           | 12.5V   |           |                          |           |  |            |                          |                 |                 |
| Protection                     | Reverse current flow through the PV module Provided,Open Circuit Protection,Short circuit protection for LED drive,Battery Reverse polarity protection, SPV Module Reverse polarity protection,Battery charging current limit ,Surge protection |           |                          |           |  |            |                          |                 |                 |
| Green LED                      | Blink in charging & contnuuous on when charged  |           |                          |           |  |            |                          |                 |                 |
| Red LED                        | Blink when batt. Low  |           |                          |           |  |            |                          |                 |                 |
| Fault                          | Green and RED led Continuous ON   |           |                          |           |  |            |                          |                 |                 |
| Light output in Lux 4 mtr.     | Min 16 Lux measured at the periphery of 4 meater diameter from a height of 4 meter Min 8 lux  |           |                          |           | Street lamp should have illumination not less than 0.5 Lux/Watt perpendiculars from the height of 9 m. |            |                          |                 |                 |
| Panel Power (Pmax)             | 40Wp  | 60Wp      | 75Wp                     | 100Wp     | 100Wp  | 120Wp      | 150Wp (75Wp*2)           | 200Wp (100Wp*2) | 200Wp (100Wp*2) |
| Panel Voc Max                  | 25V DC  |           |                          |           |  |            |                          |                 |                 |
| Battery Type                   | Flooded/VRLA  |           |                          |           |  |            |                          |                 |                 |
| Battery Capacity C/10          | 30Ah C/10   | 40Ah C/10 | 50Ah C/10                | 75Ah C/10 | 75Ah C/10  | 100Ah C/10 | 120Ah C/10               | 150Ah C/10      | 150Ah C/10      |
| Pole Detail                    | GI 5 Meter  |           | GI 5 –7 Meter (Optional) |           |  |            | GI 5 –9 Meter (Optional) |                 |                 |

Technical Specifications can be changed without prior notice.

Ac Led Street Light Specification

|                                |  |             |             |             |             |             |             |             |             |             |             |
|--------------------------------|--|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| TESTING PARAMETERS             | 20W  | 25W         | 30W         | 35W         | 40W         | 45W         | 60W         | 70W         | 100W        | 120W        | 150W        |
| General Characteristics        |  |             |             |             |             |             |             |             |             |             |             |
| LED Type                       | Chip led 1.2W 3030 OSRAM                         |             |             |             |             |             |             |             |             |             |             |
| No. Of LED                     | 35   | 42          | 49          | 56          | 63          | 72          | 91          | 112         | 150         | 180         | 210         |
| Driver Efficiency @220V        | >85%   |             |             |             |             |             |             |             |             |             |             |
| Rated Voltage                  | 220V AC,50Hz                                     |             |             |             |             |             |             |             |             |             |             |
| Voltage Range ±10V             | 100–300V AC                                      | 100–300V AC | 140–300V AC | 140–300V AC | 140–300V AC | 140–300V AC | 100–300V AC | 100–300V AC | 100–300V AC | 100–300V AC | 100–300V AC |
| Output Constant Current ± 20mA | 700mA  | 700mA       | 700mA       | 700mA       | 900mA       | 900mA       | 700mA       | 700mA       | 700mA       | 700mA       | 700mA       |
| PF                             | >0.9   |             |             |             |             |             |             |             |             |             |             |
| Input Current ± 20mA           | 100mA  | 120mA       | 150mA       | 160mA       | 185mA       | 205mA       | 272mA       | 320mA       | 430mA       | 520mA       | 520mA       |
| Color temperature              | 5500–6500°K                                      |             |             |             |             |             |             |             |             |             |             |
| CRI                            | >70  |             |             |             |             |             |             |             |             |             |             |
| Lumen Efficiency (lm/w)        | 100  |             |             |             |             |             |             |             |             |             |             |
| Protection                     | Open circuit protection,Short Circuit protection |             |             |             |             |             |             |             |             |             |             |
| Surge Protection               | 4.0KV  |             |             |             |             |             |             |             |             |             |             |
| H.V Voltage                    | >2.0KV   |             |             |             |             |             |             |             |             |             |             |
| Protection gard                | IP65,Aluminium casting body                      |             |             |             |             |             |             |             |             |             |             |

Technical Specifications can be changed without prior notice.

Integrated Solar Street Light



Integrated Solar Street Light comes equipped with an inbuilt Lithium Ion or Lithium Phosphate battery pack. Solar Panel is external and adjustable independent of Luminary allowing for flexible orientation for optimum solar charging.

|   |   |         |                                       |
|---|---|---------|---------------------------------------|
| Description   | 9W LED  | 12W LED | 14W LED                               |
| Solar Panel   | 40Wp Solar Panel Polycrystalline/Monocrystalline  |         |                                       |
| LED Light   | 9W LED  | 12W LED | 14W LED                               |
| Battery Capacity (Option1) 2 Yr Warranty                    | 12.8V 11AH Li–Ferro phosphate Battery   |         | 12.8V 18AH Li–Ferro phosphate Battery |
| Battery Capacity (Option2) 3 Yr Warranty                    | 14.8 V 10.4AH Li–ion Battery  |         | 14.8 V 13AH Li–ion Battery            |
| Motion Sensor   | PIR Motion Sensor(12m Range)  |         |                                       |
| Lumen Output \Watt  | 130–140 Lumen/Wp  |         |                                       |
| Operation   | Light will glow in full bright mode for first 4 hours, After 4 hours, Light will Dim to 33% Power and motion sensor will activate for detection of motion. If a human motion is detected in 12M area around the light, It will glow in full mode for 1 minutes, After that it will again come to 33% power. |         |                                       |
| LED Driver Efficiency                                       | >93.5%  |         |                                       |
| LED Light Operating Voltage Range                           | 11–16V  |         |                                       |
| Load Cutt–Off Voltage for Battery Deep Discharge Protection | 11.2 volt ±1  |         |                                       |
| Space Between pole and Pole                                 | 20mtr to 30mtr  |         |                                       |
| Product Warranty  | 2 Years Warranty complete System (Battery warranty 5 Year).   |         |                                       |
| Light Backup Time   | Full Night  |         |                                       |
| Net Weight  | 13Kg Approx   |         |                                       |
| Product Dimension (L*W*H)                                   | 770*580*145   |         |                                       |
| Over Charge Protection                                      | Provided  |         |                                       |
| Deep discharge protection                                   | Provided  |         |                                       |
| load open & short protection                                | Provided  |         |                                       |
| Indication on Charging                                      | Green LED Glow  |         |                                       |
| Indication on Battery Low                                   | Red LED Glow  |         |                                       |
| Indication on Higher Cutt Off                               | Green LED Blinking  |         |                                       |
| Reverse Current Flow protection                             | Provided  |         |                                       |
| Temperature Compensation                                    | Provided  |         |                                       |
| Battery reverse Protection                                  | Provided  |         |                                       |
| Packaging Contains  | Integrated light with SPV, Mounting bracket,U–clamp, Nut–bolt   |         |                                       |

Note - We have battery option Li-ion or Li-Ferro Phosphate.

Technical Specifications can be changed without prior notice.



## DSP Sine Wave Home UPS & Inverter



Our products are the outcome of passion of a few young and enthusiastic technocrats. Since its inception the company has conquered new horizons and set new standards for the industry. Cutting-edge technology and international class of manufacturing facilities and total focus on quality and testing ensure that all out Inverters & UPS, give sustained trouble free performance for a long time.

Lento pioneered Pure Sine Wave technology in its inverters, UPS and power supplies. Our Sine Wave inverters output stable frequency and voltage, mimicking mains power supply, making it perfectly suitable to power expensive equipments, especially inductive loads that do not work well on square waves.

Other products in markets delivers distorted output waveforms particularly on normally encountered loads like Compact Fluorescent Lamp (CFL), Tube Lights, Motors, Air Coolers, and Computers etc. This Distorted waveform is harmful for almost all the home appliances. Lento DSP Sinewave Home UPS & Inverter delivers quality output with reliable performance at a reasonable price. Lento DSP based Sine wave inverters & UPS are specialized in providing clean and stable power supply to all connected appliances and equipments.

### Salient Features & Comparison with Other available Brands

| Features   | Other Brands | Lento |
|--|--------------|-------|
| Intelligent Battery Charger for Deep Discharged Battery.   | No           | Yes   |
| More Back-up being a Sine Wave UPS (ASIC Control)  | Yes          | Yes   |
| No humming Noise (Silent UPS)  | No           | Yes   |
| Selector Switch for Normal/UPS   | Yes          | Yes   |
| Advance Battery Management for longer battery life and prevent battery from overcharging                   | Yes          | Yes   |
| Comprehensive LCD Display to show all system parameters  | No           | Yes   |
| Sine Wave Output even on CFL like load   | No           | Yes   |
| DSP based which results proper control on voltage and current  | No           | Yes   |
| Field Failure Ratio (Less than 1%) The most reliable product of Industry in India as per industry feedback | No           | Yes   |

## DSP Sine Wave Home UPS & Inverter

### Technical Specifications of Home Ups

| PARAMETERS/CHECKS                             | MODELS         |             |             |              |                  |              |
|---|----------------|-------------|-------------|--------------|------------------|--------------|
|   | DSP            |             |             |              |                  |              |
| Dischrging Mode                               | 300VA-12V      | 650VA - 12V | 850VA - 12V | 1050VA - 12V | 1450VA – 12V/24V | 2000VA - 24V |
| Maximum No Load Current @ Full Charge Battery | ≤2.2A          |             |             | ≤2.4A        | ≤2.2A            |              |
| O/P Voltage @ No Load                         | 220V ± 7V      |             |             |              |                  |              |
| Full Load Battery Current                     | 23A            | 41A. ± 2A.  | 53A. ± 2A.  | 62A. ± 2A.   | 46A. ± 2A.       | 62A. ± 2A.   |
| O/P Voltage @ Full Load                       | 180-220V       |             |             |              |                  |              |
| Over Load Protection                          | >25A           | >43A        | >55A        | >64A         | >48A             | >64A         |
| Battery Low Alarm                             | 10.6 ± 0.2V    |             |             |              |                  |              |
| Battery Low Protection                        | 10.4 ± 0.2V    |             |             |              |                  |              |
| Short Ckts Protection (One Retry)             | OK             |             |             |              |                  |              |
| INV Out Put Frequency                         | 50.0Hz ± 0.5Hz |             |             |              |                  |              |

#### UPS MODE

|                          |              |
|--------------------------|--------------|
| Input Voltage Range      | 180 - 260V   |
| Low Cut Voltage          | 180V ± 10V   |
| Low Cut Voltage Recovery | 190V ± 10V   |
| High Cut                 | 260V ± 10V   |
| High Cut Recovery        | 255 V ± 10 V |
| Maximum Change Over Time | < 10ms       |

#### NORMAL MODE

|                          |            |
|--------------------------|------------|
| Input Voltage Range      | 100 - 280V |
| Low Cut Voltage          | 100V ± 10V |
| Low Cut Voltage Recovery | 110V ± 10V |
| High Cut                 | 280V ± 10V |
| High Cut Recovery        | 270V ± 10V |
| Maximum Change Over Time | < 40ms     |

#### CHARGING MODE

|  |                   |          |          |          |
|--|-------------------|----------|----------|----------|
| Charging Current @ 220VAC (NC)             | 10A ± 1A          | 11A ± 1A | 10A ± 1A | 11A ± 1A |
| Charging Current @ 220vac (HC)             | 12A ± 1A          | 14A ± 1A | 12A ± 1A | 14A ± 1A |
| Boost Charging Voltage Per Battery (HC/NC) | 14.5V/14.0 ± 0.2V |          |          |          |
| Float Charging Voltage Per Battery         | 13.6V ± 0.2V      |          |          |          |
| Short Circuit                              | OK                |          |          |          |

#### PROTECTION

|                                    |        |
|------------------------------------|--------|
| Over Load Auto Retries             | 6times |
| Battery Voltage Low (Auto Retries) | 4times |

#### WEIGHT & DIMENSIONS

|              |               |               |               |               |               |               |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Model        | 650VA         | 650VA         | 850VA         | 1050VA        | 1450VA        | 2KVA          |
| Capacity     | 650VA 12VDC   | 650VA 12VDC   | 850VA 12VDC   | 1KVA 12VDC    | 1450VA 24VDC  | 2KVA 24VDC    |
| Dimensions   | 340x330x185mm | 340x330x185mm | 340x330x190mm | 340x330x205mm | 430x400x240mm | 450x440x250mm |
| Net Weight   | 7kg           | 9.1Kg         | 9.95Kg        | 11.2Kg        | 17.25Kg       | 19Kg          |
| Gross Weight | 7.5Kg         | 9.8Kg         | 10.80 Kg      | 12Kg          | 18.6Kg        | 21Kg          |

Technical Specifications can be changed without prior notice.





## DSP Sine Wave Home UPS & Inverter

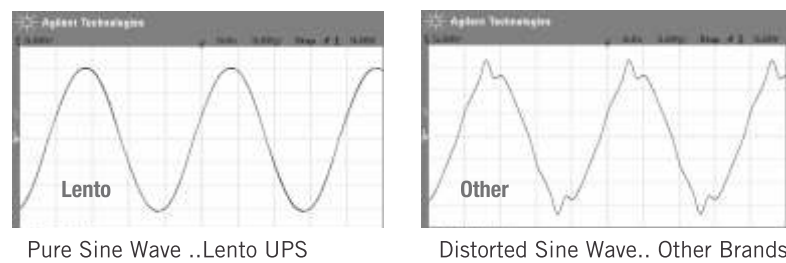


### Applications

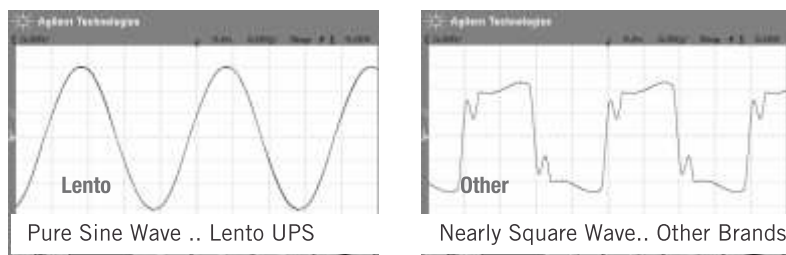
- Power Back-up for House hold as well as the computer, Small shops, Small offices etc.
- Small Water pumps and all motor based small applications
- TV Sets, Fans, Tube Lights, computers etc.

### Why Lento UPS is better than other Home UPS / Inverter ?

#### A.) Output Waveform of Inverter with Load of 15 Tubelights



#### B) Output Waveform of Inverter with Load of 35 CFLs or Energy Saving Lamps



Lento DSP Based Home UPS/Inverter provides Pure Sine Wave output, whereas output of Home UPS of other brands gets badly distorted especially on normal loads like Compact Fluorescent Lamp, Tube Lights, Motors, Coolers & Computers etc.. this type of Distorted Waveform is very Harmful for all your Sophisticated Electronic Appliances.

Hence, Lento DSP based Home UPS is the preferred choice. It delivers Pure Power, with Reliable Performance and at a Reasonable Price.

## DSP Sine Wave Static UPS & Inverter



Most appliances like CFL, fans, motor based equipments like air conditioners and pump sets are designed to work on 50 Hz sine wave. Running such equipments on unregulated quasi sine wave-square wave based Inverters poses a risk as regards performance and durability. Lento DSP sine wave Static UPS and Inverters are designed to provide stable 50 Hz sine wave irrespective of load and battery voltage, making them the most suitable for inductive, capacitive and non-resistive loads. Importantly, our products are designed to deliver instantaneous high current during start up, especially in case of air conditioners and refrigerators, with safety cut out when battery voltage goes lower than a specified point to avoid brownouts and burning of motors.



- 2.5 KVA
- 3 KVA
- 3.5 KVA
- 5 KVA
- 6 KVA
- 7.5 KVA
- 10 KVA
- 12 KVA



# DSP Sine Wave Static UPS & Inverter

# DSP Sine Wave Static UPS & Inverter

## Salient Features & Comparison with Other available Brands

| Features   | Other Brands | Lento |
|--|--------------|-------|
| State Of Art MOSFET/IGBT Based PWM Technology to increase Crest Factor.  | Yes          | Yes   |
| Fast Changeover ensuring reliable Compatibility with Computers   | No           | Yes   |
| Electronic change over, hence much better reliability others are using relay for changeover whereas we are using SCR | No           | Yes   |
| Selector Switch for Normal/UPS   | No           | Yes   |
| TDR (Time Delay Relay), especially for AC compressor based applications Partly (Some brands have some does not have) | Yes          | Yes   |
| LCD Display Options  | Yes          | Yes   |
| Surge Load Capacity up to 300%   | No           | Yes   |
| DSP based which results proper control over voltage and current  | No           | Yes   |

## Why Lento Static UPS is better than other Inverters ?

- The OFF Line UPS above 1.5KVA are highly unreliable and not available with any brand..
- The ON Line UPS always wastes 10-15% electricity. i.e. Power Loss. About 40% Loss due to poor power Factor is additional to the above.
- For the applications where the fully regulated Voltage and frequency is not required, the Static UPS is the best solution. It provides the reliability of an ON Line UPS and with negligible power loss when Input Mains AC is present.

## Applications

- Major power Back up source in corporate offices as well as Call Centers
- Computer & peripherals /office Equipment like, Scanners, Printers, Fax Machine etc.
- Emergency & Mobile Power Systems
- A.C and all Compressor Based Applications
- Petrol/Diesel Dispensing (Filling) Machines
- Tread Mills & other Health Equipment in Homes/Gyms
- Water Pumps and similar Motor Based Applications
- All types of clinical equipments.



## Technical Specifications of Static UPS & Inverter

| DESCRIPTION                       | MODELS               |               |                |              |           |                 |                 |              |
|-----------------------------------|----------------------|---------------|----------------|--------------|-----------|-----------------|-----------------|--------------|
| INVERTER MODEL                    | 2.5KVA 36V/48V       | 3KVA 36V/48V  | 3.5KVA 36V/48V | 5KVA/48V     | 5KVA/96V  | 7.5KVA 96V/120V | 10KVA 120V/180V | 12KVA/192V   |
| No. Load battery Current          | ≤2.2A                |               |                |              |           |                 |                 |              |
| Max. O/P No. Load Voltage         | 220V ± 5V            |               |                |              | 230V ± 5V |                 |                 |              |
| Max. Full Load Voltage            | 220 ± 7%             |               |                |              |           | 230 ± 10%       |                 |              |
| Max. load Battery Current Maximum | <49Amp.              | <54Amp.       | <57Amp.        | <106Amp.     | <49Amp.   | <65Amp.         | <53Amp.         | <62Amp.      |
| Full Load O/P Current             | 8.5 ± 0.7 Amp.       | 9.5 ± 0.7Amp. | 10.5 ± 0.7Amp. | 17 ± 0.5Amp. | 17 ± 0.5A | 27 ± 0.5Amp.    | 34 ± 0.5Amp.    | 38 ± 0.5Amp. |
| Overload Retry                    | 6 Times              |               |                |              |           |                 |                 |              |
| Output Frequency (Inverter Mode)  | 50.0 ± 1.0 Hz.       |               |                |              |           |                 |                 |              |
| Batt Low Voltage Alarm            | 10.5V ± 0.2V / Batt. |               |                |              |           |                 |                 |              |
| Batt Low Voltage Cut              | 10.0V ± 0.2V / Batt. |               |                |              |           |                 |                 |              |
| Output Sine wave (Inverter)       | Should be Ok         |               |                |              |           |                 |                 |              |

### MAINS MODE

|                                      |              |           |           |
|--------------------------------------|--------------|-----------|-----------|
| Output Sine Wave (Mains) Through CRO | Should be Ok |           |           |
| Mains Low Cut                        | 100 ± 10V    | 115 ± 10V | 125 ± 10V |
| Recovery                             | 110 ± 10V    | 125 ± 10V | 135 ± 10V |
| Mains High Cut                       | 280 ± 10V    |           |           |
| Recovery                             | 275 ± 10V    |           |           |
| Change Over time (Mains to Inverter) | <50 ms.      |           |           |
| Change Over time (Inverter to Mains) | <10ms.       |           |           |
| Battery Low Retry                    | 4 Times      |           |           |
| Short Circuit, Retry                 | Ok, 1 Time   |           |           |
| Permanent Short Circuit Protection   | Should be Ok |           |           |

### UPS MODE

|                                 |          |
|---------------------------------|----------|
| Mains Low Cut                   | 180 ± 5V |
| Recovery                        | 190 ± 5V |
| Mains High Cut                  | 260 ± 5V |
| Recovery                        | 255 ± 5V |
| Change Over time (Mains to UPS) | <=10 ms. |
| Change Over time (UPS to Mains) | <10ms.   |

### MAINS MODE

|                        |               |            |            |
|------------------------|---------------|------------|------------|
| Max. Charging Current  | 20 ± 2Amp.    | 25 ± 1Amp. | 20 ± 2Amp. |
| Boost Charging Voltage | 14.2V / Batt. |            |            |

### WEIGHT AND DIMENSIONS

|                                |             |             |             |             |             |             |             |             |
|--------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| With Packaging LXWXH in mm     | 470x440x610 | 470x440x610 | 470x440x610 | 500x495x660 | 500x495x660 | 600x500x740 | 600x500x740 | 600x500x740 |
| With Out packaging LXWXH in mm | 310x290x450 | 310x290x450 | 310x290x450 | 350x300x540 | 350x300x540 | 550x350x660 | 550x350x660 | 550x350x660 |
| Net Weight                     | 29          | 32          | 32          | 54          | 54          | 78          | 89          | 104         |
| Gross Weight                   | 36          | 39          | 39          | 58          | 58          | 89          | 100         | 115         |

### LOAD CHART\*

| INVERTER CAPACITY | LIGHT | FAN | TV | PC | FRIDGE | AC  | FREEZER | MICROWAVE / Oven | DVD | ELECTRIC GEYSER | DISH WASHER | TOASTER | COFFEE MAKER | VACCUME CLEANER | Petrol Filling Machine | NO. OF BATTERIES |
|-------------------|-------|-----|----|----|--------|-----|---------|------------------|-----|-----------------|-------------|---------|--------------|-----------------|------------------------|------------------|
| 850 VA /12 V      | 3     | 2   | 1  | 1  | -      | -   | -       | -                | 1   | -               | -           | -       | -            | -               | -                      | 1                |
| 1000 VA /12 V     | 4     | 3   | 1  | 1  | -      | -   | -       | -                | 1   | -               | -           | -       | -            | -               | -                      | 1                |
| 1450 VA /24 V     | 5     | 4   | 1  | 1  | -      | -   | -       | -                | 1   | -               | -           | -       | -            | -               | -                      | 2                |
| 2000 VA /24 V     | 6     | 5   | 2  | 1  | -      | -   | -       | -                | 1   | -               | -           | -       | -            | -               | -                      | 2                |
| 2.5 KVA /36 V     | 6     | 6   | 1  | 1  | 1***   | -   | -       | -                | 1   | -               | -           | -       | -            | -               | -                      | 3                |
| 2.5 KVA /48 V     | 6     | 6   | 1  | 1  | 1***   | -   | -       | -                | 1   | -               | -           | -       | -            | -               | -                      | 4                |
| 3 KVA /48 V       | 6     | 7   | 1  | 1  | 1***   | -   | -       | -                | 1   | -               | -           | -       | -            | -               | -                      | 4                |
| 3.5 KVA /48V      | 6     | 6   | 3  | 3  | 1***   | -   | -       | -                | 1   | -               | -           | -       | -            | -               | -                      | 4                |
| 5 KVA /48 V       | 7     | 7   | 3  | 4  | 1***   | -   | 1       | 1                | 1   | 1               | -           | 1       | -            | 1               | 1                      | 4                |
| 5 KVA /96 V       | 9     | 9   | 4  | 5  | 1***   | -   | 1       | 1                | 1   | 1               | -           | 1       | -            | 1               | 1                      | 8                |
| 7.5 KVA /120 V    | 8     | 8   | 3  | 4  | 1      | 1** | 1       | 1                | 1   | 1               | -           | 1       | 1            | 1               | 1                      | 10               |
| 10 KVA /180 V     | 12    | 10  | 3  | 4  | 1      | 1** | 1       | 1                | 1   | 1               | 1           | 1       | 1            | 1               | 2                      | 15               |
| 15 KVA /360 V     | 18    | 12  | 4  | 5  | 1      | 2** | 1       | 1                | 1   | 1               | 1           | 1       | 1            | 1               | 3                      | 30               |
| 20 KVA /360 V     | 18    | 25  | 6  | 8  | 2      | 2** | 2       | 1                | 2   | 2               | 1           | 1       | 1            | 1               | 4                      | 30               |
| 30 KVA /360 V     | 42    | 42  | 12 | 16 | 2      | 5** | 2       | 1                | 3   | 3               | 1           | 1       | 1            | 1               | 5                      | 30               |

These load values are estimated. Exact calculations depend on appliances manufactures specifications

(\*\*)- AC should be 1.5 HP

(\*\*\*) -Maximum fridge should be 185 Litre

Technical Specifications can be changed without prior notice.

Also Available in **SNMP & GSM** (Simple Network Management Protocol)

DSP Sine Wave Online UPS



Lento DSP sine wave online UPS feature a wealth of advanced features. Designed for use with expensive critical electronic instrumentation, these UPS systems have a host of safety controls to ensure your devices are always protected. Lento DSP online UPS performs very well in case of mains failure, sensing of voltage fluctuations and automatic switchover, lightning guard, electrostatic protection, overvoltage and overload protection, short circuit protection and low battery protection. Lento DSP UPS are configured to be always active when power fails. At the same time the batteries are kept constantly charged through a monitoring circuit to ensure their longevity. DSP sine wave online UPS are preferred especially when they are Lento with guaranteed frequency and voltage control along with inbuilt protection features.

Lento low frequency series online UPS meets critical industry standards with its state of art digital intelligent online UPS technologies with the best power factor rating and consistently reliable performance day in and day out.

We are recognized as the foremost manufacturer, exporter and supplier of an exclusive quality array of DSP based UPS Series. Specially designed for small data centres and critical load appliances, this range is manufactured using optimum quality factor inputs. Moreover, it is made by experts that rigorously inspect this range on various parameters of quality. Available in various technical specifications this product can also be customized in accordance with preferences laid by our patrons.

Applications

- Major Power Back up source in corporate offices as well as call centres.
- Banks & ATMs.
- Life saving medical equipments and diagnostic labs.
- Photography and colour labs.
- Emergency Devices (Lights/Alarms)
- Fire Devices.
- Telecommunication Devices.
- Industrial Applications.
- Vital real time & process control equipment in industries.
- Aviation and broadcasting.

Above then 60 KVA Online UPS are available with power factor control along with advance technology are available on specific requirements.

Also Available in  
SNMP & GSM  
(Simple Network  
Management Protocol)

- | 1 KVA
- | 2 KVA
- | 3 KVA
- | 5 KVA
- | 7.5 KVA
- | 10 KVA
- | 15 KVA
- | 20 KVA
- | 25 KVA
- | 30 KVA
- | 35 KVA
- | 40 KVA
- | 50 KVA
- | 60 KVA

DSP Sine Wave Online UPS

Salient Features

- DSP Based double conversion topology with enhanced control over the voltage and frequency.
- In-Built requisite safety & protections like Short circuit, over temp, Battery Low/High, etc. With comprehensive display.
- Wide Input Voltage and frequency range.
- Pure Sine Wave Output.
- Generator Compatibility.
- (Remote) Monitoring and Auto – Shutdown software.
- Extremely Low Total Harmonics distortion (<3%)
- Web, SNMP & GSM based monitoring (optional)
- Cold Start.
- LCD Display
- Ability to handle 100% phase imbalance on output while maintaining perfect balance on the input phases.

TECHNICAL SPECIFICATIONS ONLINE UPS

| Description | Single Phase |            |            |      |        |       | 3 Phase In - 1 Phase Out |       |       |       | 3 Phase In - 3 Phase Out |       |                |                |
|-------------|--------------|------------|------------|------|--------|-------|--------------------------|-------|-------|-------|--------------------------|-------|----------------|----------------|
|             | 1KVA<br>HF   | 2KVA<br>HF | 3KVA<br>HF | 5KVA | 7.5KVA | 10KVA | 7.5KVA                   | 10KVA | 15KVA | 20KVA | 7.5KVA                   | 10KVA | 15KVA<br>30KVA | 40KVA<br>60KVA |

|                             |  |        |             |             |         |
|-----------------------------|--|--------|-------------|-------------|---------|
| Output Wave Form            | Pure Sine Wave                             |        |             |             |         |
| Nominal Battery Voltage     | 36V DC                                     | 96V DC | 180V DC     | 192V DC     | 360V DC |
| Output Power Factor         | 0.8  |        |             |             |         |
| No Load Batt. Current       | 1.1A±0.2A                                  |        |             |             |         |
| Total Harmonic Distortion   | < 3%                                       |        |             |             |         |
| No Load O/P Voltage(L-N)    | 230±1%                                     |        |             | 230V AC ±1% |         |
| No Load O/P Voltage (L-L)   | N/A  | N/A    | N/A         |             | 415±1%  |
| O/P Frequency               | 50Hz±0.5Hz                                 |        |             |             |         |
| Full Load O/P Voltage (N-L) | 230V AC±1%                                 |        | 230V AC ±1% |             | 230±1%  |
| Full Load O/P Voltage (L-L) | N/A  |        | N/A         |             | 415±1%  |
| Low Battery Cut Off         | 10.4V±0.2V DC Per Battery (12V DC Battery) |        |             |             |         |
| Low Battery Indication      | 10.6V±0.2V DC Per Battery (12V DC Battery) |        |             |             |         |

| MAINS MODE                 |  |     |                    |                    |
|----------------------------|--|-----|--------------------|--------------------|
| Input Voltage Range (N-L)  | 140V-280V±5V AC                            |     | 170V to 270V±5V AC |                    |
| Input Voltage Range (L-L)  | N/A  |     |                    | 290V to 480V±5V AC |
| Input Frequency Range      | 40Hz to 60Hz                               |     |                    |                    |
| Input Power Factor Lagging | 0.9  | 0.9 | N/A                |                    |
| Charging Current           | 5A to 10+1A                                |     | 1.5A to 8A±1A      |                    |
| Boost Charging Voltage     | 13.9V±0.2V DC Per Battery (12V DC Battery) |     |                    |                    |

|             |   |  |  |  |  |  |  |  |  |  |  |  |  |  |
|-------------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Protections | Output Not Ok, Battery Voltage Low, Over Load                           |  |  |  |  |  |  |  |  |  |  |  |  |  |
|             | Battery Over Charge, Over Temperature, Short Circuit, Mains MCB Tripped |  |  |  |  |  |  |  |  |  |  |  |  |  |

|          |   |  |  |  |  |  |  |  |  |  |  |  |  |  |
|----------|---|--|--|--|--|--|--|--|--|--|--|--|--|--|
| Displays | Welcome Message, Capacity, Output Voltage, Output Frequency, Load Percentage    |  |  |  |  |  |  |  |  |  |  |  |  |  |
|          | Input Voltage and Frequency, Battery Charging, Battery Voltage, All Protections |  |  |  |  |  |  |  |  |  |  |  |  |  |

|                          |                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |
|--------------------------|--------------------------------------|--|--|--|--|--|--|--|--|--|--|--|--|--|
| ENVIRONMENTAL PARAMETERS |                                      |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Operating Temperature    | 0 Deg – 45 Deg                       |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Acoustic Noise at 1 Mtr. | < 45 dB                              |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Relative Humidity        | Max 95% non - Condensing             |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Thermal Management       | Integrated Cooling (Fan & Heat Sink) |  |  |  |  |  |  |  |  |  |  |  |  |  |

|                               |             |       |       |             |             |       |       |       |       |             |             |       |             |               |
|-------------------------------|-------------|-------|-------|-------------|-------------|-------|-------|-------|-------|-------------|-------------|-------|-------------|---------------|
| WEIGHT AND DIMENSIONS         |             |       |       |             |             |       |       |       |       |             |             |       |             |               |
| With Packaging LxWxH in mm    | 400x420x135 |       |       | 600x500x730 | 700x500x950 |       |       |       |       | 860x630x950 | 700x500x780 |       | 860x630x950 | 1020x860x1450 |
| Without Packaging LxWxH in mm | 350x320x90  |       |       | 400x350x600 | 550x350x670 |       |       |       |       | 700x460x830 | 550x350x670 |       | 700x460x830 | 810x580x1310  |
| Net Weight                    | 6.5Kg       | 8.5Kg | 8.5Kg | 70Kg        | 92Kg        | 107Kg | 95Kg  | 110Kg | 152Kg | 180Kg       | 105Kg       | 121Kg | .....       | .....         |
| Gross Weight                  | 7.1Kg       | 9.1Kg | 9.1Kg | 79Kg        | 104Kg       | 119Kg | 107Kg | 122Kg | 167Kg | 195Kg       | 120Kg       | 141Kg | .....       | .....         |

\*\* Both External & Internal Battery Models are Available  
Technical Specifications can be changed without prior notice.



DSP Sine Wave Three Phase Inverter (ALBS)



Lento DSP sine wave Automatic Lift Backup System (ALBS) is specifically designed to address the requirements of running lift motors with high torque. These ALBS output 3 phase supply that is similar to the 4 wire mains 3 phase supply and can be effortlessly switched in with a simple electronics changeover in case of power failure to power lifts and elevators. The same ALBS can be used as a power source for staircase, parking, compound and common lighting as well as a power source for security systems. Lento ALBS features DSP based three phase sine wave output inverter module, battery charger, electronic change over and extra heavy duty components to handle high starting torque currents drawn by lift motors, pump sets and air conditioners.

Applications

- For providing reliable power back-up for Lift/ Elevators
- As a major power supply source for water Pumps, Fire pumps & other 3Phase critical motorized equipment
- Petrol/Diesel Dispensing (Filling) Machines
- Tread Mills & other Health Equipment in Homes/Gyms
- Major Power Back Up source in Corporate Offices as well as Call Centres
- Computers & peripherals/ Office Equipment like Scanners, Printers, and Fax Machines etc.
- Emergency & Mobile Power Systems
- Air Conditioners and all compressor Based applications Like Water Cooler, Bottle Coolers, Ice Cream Parlours etc



- 6 KVA
- 8 KVA
- 10 KVA
- 12 KVA
- 15 KVA
- 20 KVA
- 25 KVA
- 30 KVA
- 40 KVA
- 50 KVA
- 60 KVA

DSP Sine Wave Three Phase Inverter (ALBS)

Technical Specifications\*

| Description | 8KVA | 10KVA | 12KVA | 15KVA | 20KVA | 25KVA | 30KVA | 40KVA |
|-------------|------|-------|-------|-------|-------|-------|-------|-------|
|             |      |       |       |       |       |       |       | 70KVA |

BACK-UP MODE

| Output Wave Form              | Pure Sine Wave                          |                    |                               |                               |                    |            |            |         |
|-------------------------------|---|--------------------|-------------------------------|-------------------------------|--------------------|------------|------------|---------|
| Nominal Battery Voltage       | 180V DC                                 | 180V DC<br>360V DC | 180V DC<br>240V DC<br>360V DC | 180V DC<br>276V DC<br>360V DC | 276V DC<br>360V DC | 360V DC    | 360V DC    | 360V DC |
| Output Power Factor           | 0.8                                     |                    |                               |                               |                    |            |            |         |
| O/P Voltage (N-L)             | 230V +- 2.5V AC                         |                    |                               |                               |                    |            |            |         |
| Max. No Load Batt. Current    | 0.9A +- 0.2A                            |                    |                               |                               |                    |            |            |         |
| Frequency                     | 50Hz+-1.0Hz                             |                    |                               |                               |                    |            |            |         |
| Total Harmonic Distortion     | <3%                                     |                    |                               |                               |                    |            |            |         |
| O/P Voltage (L-L)             | 400V+-2.5V AC                           |                    |                               |                               |                    |            |            |         |
| Full Load O/P Current / Phase | 12A+0.5A                                | 14A+0.5A           | 17A+0.5A                      | 21.5A+0.5A                    | 23.5A+0.5A         | 29.5A+0.5A | 34.9A+0.5A | .....   |
| Low Battery Indication        | 10.5A+0.2V DC Per Battery (12V DC Each) |                    |                               |                               |                    |            |            |         |

MAINS MODE

| Input Voltage Range (N-L) | 140V to 280V AC+10V AC                    |
|---------------------------|---|
| Input Voltage Range (N-L) | 242V to 484V AC+10V AC                    |
| Max. Charging Current     | 10A+1A                                    |
| Boost Charging Voltage    | 14.2V + 0.2V DC Per Battery (12V DC Each) |
| Trickle Charging Voltage  | 13.7V + 0.2V DC Per Battery (12V DC Each) |

FOR THREE PHASE INVERTER

| Change over time (Mains to Battery) | <= 40 millicsec |
|-------------------------------------|-----------------|
| Change over time (Battery to Mains) | <= 10 millicsec |

FOR THREE PHASE ALBS

| Change over time (Mains to Battery) | <= 30 sec |
|-------------------------------------|-----------|
| Change over time (Battery to Mains) | <= 10 sec |

PROTECTIONS

| Protections | Output not ok, Battery Voltage Low (4 Auto Retries), Over Load (6 Auto Retries)<br>Battery Over Charge, Over Temperature, Short Circuit, Main MCB Tripped |
|-------------|---|
|-------------|---|

DISPLAYS

| Displays | Welcome Message, Capacity, Output Voltage, Output Frequency, Load Percentage<br>Input Voltage and Frequency, Battery CHarging, Battery Voltage, All Protections |
|----------|---|
|----------|---|

ENVIRONMENTAL PARAMETERS

| Operating Temperature    | 0 Deg. - 45 Deg.                     |
|--------------------------|--------------------------------------|
| Acoustic Noise at 1 Mtr. | < 45 dB                              |
| Relative Humidity        | Max 95% non - Condensing             |
| Thermal Management       | Integrated cooling (Fan & Heat Sink) |

WEIGHT AND DIMENSIONS

| With Packaging LxWxH in mm    | 700x500x780 |        |        |        | 860x630x950 |        |        | 1020x860x1450 |
|-------------------------------|-------------|--------|--------|--------|-------------|--------|--------|---------------|
| Without Packaging LxWxH in mm | 540x340x660 |        |        |        | 700x450x840 |        |        | 810x580x1310  |
| Net Weight                    | 93 Kg       | 96 Kg  | 106 Kg | 134 Kg | 171 Kg      | 212 Kg | 218 Kg | .....         |
| Gross Weight                  | 104 Kg      | 107 Kg | 117 Kg | 148 Kg | 191 Kg      | 232 Kg | 245 Kg | .....         |

Technical Specifications can be changed without prior notice.





## Our Business Verticals

- » International Business
- » OEM Business
- » Institutional & Corporate Business
- » Domestic Distribution Business
- » Turnkey Projects
- » New Products Development through R & D



## Our upcoming future Products range

- » BLDC Bades Motor Solutions like fans, pumps etc.
- » Water pumping solutions
- » Voltage Surge protectors
- » Distribution Box and Control Panels
- » Wires and MCBs







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